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ABSTRACT

This paper reviews several previous studies of course offerings in a large number of Electronic Business/Commerce concentrations in both MBA and MS programs. Results from these earlier studies indicate that there is no apparent consensus in what knowledge is core to the Electronic Business/Commerce concentration. This study takes data from these previous studies and looks at the number and types of courses offered in Electronic Business/Commerce concentrations and compares and contrasts what is offered in MS and MBA programs. This analysis reveals that there are some trends that can be identified in Electronic Business/Commerce concentration offerings. Certain core knowledge is offered in many of the programs reviewed, but the level presented varies greatly. The analysis also reveals that there is some correlation among the most common course offerings. A key discriminant is the presence of an E-business marketing course. When this course is present, it often signals the co-occurrence of other specific additional courses, forming a package of core course content. When the course is not part of the program, there is significant variation among the remaining course offerings of the program. (Contains 11 references.) (Author)

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E-BUSINESS EDUCATION: A QUANTITATIVE REVIEW OF PROGRAM ATTRIBUTES AND OFFERINGS

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ABSTRACT

This paper reviews several previous studies of course offerings in a large number of Electronic Business/Commerce concentrations in both MBA and MS programs. Results from these earlier studies indicate that there is no apparent consensus in what knowledge is core to the Electronic Business/Commerce concentration. This study takes data from these previous studies and looks at the number and types of courses offered in Electronic Business/Commerce concentrations and compares and contrasts what is offered in MS and MBA programs. This analysis reveals that there are some trends that can be identified in Electronic Business/Commerce concentration offerings. Certain core knowledge is offered in many of the programs reviewed, but the level presented varies greatly. The analysis also reveals that there is some correlation among the most common course offerings. A key discriminant is the presence of an E-business marketing course. When this course is present, it often signals the co-occurrence of other specific additional courses, forming a package of core course content. When the course is not part of the program, there is significant variation among the remaining course offerings of the program.

INTRODUCTION

This paper discusses some of the issues and concerns voiced by those tasked with planning and developing Electronic Business or Electronic Commerce programs at schools, and practitioners or students trying to find a "good" E-business program. The main issue seems to revolve around the question of what should an Electronic Commerce/Business program present as key elements. This is not a new discussion, but it is one that has still not been satisfactorily resolved. This paper builds on material developed in three prior studies and applies several statistical tools in an attempt to answer this question. The task is complicated by the fact that Electronic Business/Commerce programs, although most often found in MBA or MS in Information Systems business programs, can also be found in Marketing, Arts and Science, Computer Science, and Engineering programs as well.

BACKGROUND

For the purposes of this paper, academic programs with the names Electronic Business, Electronic Commerce, E-Business, E-Commerce, Internet Commerce, et cetera will be referred to generically as E-business. Organizations continue to be focused on the potential of E-business to increase their competitiveness and improve profitability (Payne, 2001). Four recent studies Novitzki (2002), Whitten and Stephens (2001), Siau and Davis, (2000), and Sendell (1999), presented results of surveys or analysis of E-Business programs. They identified a large and diverse number of course offerings across the schools and programs studied. They presented either lists of courses or summary tables that describe the varied curricular offerings found and discuss their impact. There are many points made, but a consistent theme is the wide variety and number of courses offered in the various programs makes it

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difficult to determine what is key E-Business knowledge.

A study done by Mitchell and Strauss (2001) identified several skill and cognitive based clusters that they felt were common to many programs. King et al (2001) and Etheridge et al (2001) presented findings which indicated that while there may be some broad clusters of knowledge, there is still considerable variety in course offerings between schools and considerable change in offerings from year to year in this rapidly evolving field. King (2001) also reported that programs are often driven more by faculty skill and stakeholder wants rather than academic focus or need.

There have been several articles (Herrmann and Pernul (1999), Teo and Too (2000), and Williams et al (2000)) which indicate that while there is significant difficulty in identifying the key issues in dealing with E-business, there is an even greater problem developing the programs that can best communicate this information to students and practitioners in the field.

CURRENT STUDY

There is, as was described above, a wide and varied perspective in E-business program offerings. Two characteristics that have not been studied quantifiably is, are there real clusters of knowledge as Mitchell and Struss (2001) contend, and is there a consistency in what is offered across programs? This study looks at the results of three previously mentioned studies (Novitzki (2002), Whitten and Stephens (2001), and Sendell (1999)). It combines the schools and programs used into a large sample of programs to determine such critical points as what does an average E-business program look like? What is the probability that a program will have one of the most common courses? What is the probability of a program having all of the most common courses? Is there any correlation between course offerings in programs that indicate a consistency of offerings or theory? With the wide variation in both school focus and degree offered, a key question that must also be considered is, how much do these factors impact the curriculum that is presented to students?

Sendell (1999) and Whitten and Stephens (2001) reported on E-business programs in Association to Advance Collegiate Schools of Business (AACSB) International accredited schools which are a subset of all schools offering these programs, and provided no comparison to other schools. Novitzki (2002) looked at a wider range of schools including AACSB schools and degree programs certified by Certified E-Commerce Consultants, many of which were not AACSB accredited.

METHODOLOGY

This study combines the schools and programs reviewed in the previous studies to develop a statistically significant sample of E-business programs. The data was reviewed for all the studies and duplicate programs were eliminated from the study. This reduced the number of schools being reviewed to 163. Offerings at these schools were broken down into MBA or MS program as appropriate due to the differences inherent in the focus, course offerings, and course requirements in these two programs.

FINDINGS

The most widely used courses for MBA and MS programs were tabulated and the results placed in Table 1. The table contains the top ten courses offered in the two degrees from a list of over 100 unique courses. The table also shows the difference in E-business concentrations between MBA and MS programs. Only three of the four top MBA courses are in the top four for MS programs, and the differences in offerings between other courses listed shows how degree focus affects course offerings. The table also clearly shows the wide variation in program offerings within each degree program. In the MBA programs only one course, E-business Marketing, is being offered in more than 50% of the programs. The MS situation is similar showing only two courses, E-business Marketing and E-business Technology being offered in more than 50% of the programs studied.

No course was offered in 100% of the schools reviewed. If we look at the top four courses in the MBA programs (the most common number in an MBA concentration), the highest presence in programs for a course was 78% and the lowest was 34%. Given the breadth and number of offerings available noted above, there is a significant variation in what is being offered in programs and some schools could have an entirely different set of courses than the ones shown here. The fact that no specific course was required in all MBA programs also means that the focus of the concentration can change significantly depending on the individual school and program.

TABLE 1
MOST COMMONLY OFFERED COURSES

Most Common Courses	MBA	MS
E-Business Marketing	78%	76%
E-Business Strategy	49%	12%
E-Business Technology	34%	73%
Legal Issues and Ethics	31%	46%
Introduction to E-Business	38%	29%
Supply Chain Management	23%	4%
E-Business Programming	4%	13%
E-Business Security	12%	13%
E-Business System Analysis and Design	6%	9%
Datamining/DBMS	9%	8%

The MS groupings also show wide variation in offerings, and Table 1 summarizes those as well. If we look at the top six courses in these programs (the most common number in an MS concentration), the top two are found in over 70% of the programs, but the lowest was found in only 13% of the programs. This wide range was due to several reasons. The schools offering an MS in E-business were varied with many not being in business schools. Due to differences in the programs' focus, there were more unique courses offered. Thus an E-business concentration in a Computer Science program had proportionally more technical and less business courses than a program offered in a business school. Similarly, a Masters in E-commerce Management in a School of arts and Science had a more balanced list of course offerings. An MS in E-business Marketing would have another mix of classes, while an E-business concentration in an MS in Information Technology from a school of Applied Science had yet another mix of course offerings.

DISCUSSION

One of the most serious problems identified is the complete lack of consistency in what is offered between programs whether they are an MBA or MS. If you take the numbers presented in Table 1 for the various programs, then the statistical likelihood of two programs offering the four most common courses to their students is barely 5% for MBA programs and less than 1% for the six courses in the MS programs. For MS programs, however, the situation is much better when you consider a subset of the courses. If only the top three courses are considered, more than 25% of the programs offer the same courses. This comparison does not help the MBA programs as much with only 12% of the MBA programs containing the top three courses.

Table 2 shows that E-business MBA concentrations, as currently offered by schools, have little consistency, and as a result it is extremely difficult to identify what the core knowledge of the E-business concentration is. Employers can have little hope expecting consistent knowledge when hiring from graduates of more than one E-business program. Students wanting an E-business concentration besides deciding whether they want an MBA or MS, must clearly research each program to see if it provides the skill set that they are looking for.

This study also reveals several points about E-business programs that have both good and bad indications. There is a set of courses which are offered at some programs, but the number offering them is currently very small. In the MS programs the presence of the same three courses in more than 25% of the programs indicates the development of a core. Overall, however, the number of offered courses is large and there is little consistency. With more than 100 unique courses being

TABLE 2
CUMULATIVE PROBABILITIES OF PROGRAM COURSE OFFERINGS

Condition	MBA Programs	MS Programs
Probability of a school offering the most commonly offered course	0.78	0.76
Probability of a school offer the two most commonly offered courses	0.38	0.55
Probability of a school offering the three most commonly offered courses	0.14	0.25
Probability of a school offering the four most commonly offered courses	0.05	0.07
Probability of a school offering the five most commonly offered courses (MS only)		0.01
Probability of a school offering the six most commonly offered courses (MS only)		<0.01

offered in these programs, it is unlikely that a standard core can develop unless this number is significantly reduced. Even though the schools sampled differed in accreditation and base degree, many of the same courses appear in both degrees. Almost 70% of the course offerings are common to both the MBA and MS degrees. There are also indications that the grouping of courses is becoming more consistent. If subsets of schools are considered, then the probability of receiving a standard set of four courses increases considerably. For example, if large AACSB schools and small AACSB schools are considered separately, then the probability of receiving the same four courses in their MBA programs increases to 16% and 12% respectively. For the MS programs there is improvement as well, but it is not nearly as much. When the large AACSB programs are separated from the small AACSB programs, the probability of receiving the same six courses increases to 3% and 1% respectively.

There are some differences in offerings between AACSB and non-AACSB schools. The top four courses in non-AACSB program differ from the small AACSB programs, but tend to match those of the large AACSB schools. One reason postulated for this is, that at schools with small MBA programs, E-business is often taught by faculty from other base disciplines. As a result offerings often tend to build on the base discipline rather than having a strategic E-business focus.

The most interesting issue, that requires more study, is why the E-commerce Marketing course and not the Introduction to E-business course seems to be a major disciminant, as well as the most common course offered in both degrees. Nothing in the literature postulates why that should be true. Yet when the E-commerce marketing course is present, MBA programs are more likely to have one or more the remaining three courses than if the course is not present. Similarly the presence of the E-commerce marketing course in an MS program increases the likelihood of other courses, but not to the extent seen in the MBA programs.

CONCLUSION

E-business programs have been developed in several disciplines. Material presented in E-business concentrations often seems more linked to the base discipline than to the issues and concerns of E-business. There is wide variation in what different schools present as E-business programs, but initial statistical analysis indicates that there is in fact a grouping of knowledge and courses appearing in programs that indicates an internal consistency that is not apparent when looking at the raw data.

The field is still developing and the changes in technical capabilities impact E-business programs as well as organizations. There is obviously still no general consensus on what should be the core knowledge in the concentration. Will these programs eventually develop a standard core? They probably will in the future, but faculty are the ones who will have to make it happen. We must design programs that are truly responsive to the needs of student, but which are also academically sound and which provide the knowledge that our graduates will need in the future as well as now. Many current programs seem to have been created more in response to specific employer needs or faculty skills rather than as a result of a detailed analysis of critical elements and knowledge in the field. If we fail to move beyond the present confused state of programs, it is unlikely that the field will develop as a major independent field of study.

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